ORIGINAL

DOCKET FILE COPY ORIGINAL

RECEIVED

JAN - 5 1995

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band	)	PR Docket No. 93-144
and		
Implementation of Section 309(j) of the Communications Act - Competitive Bidding 800 MHz SMR	)	PP Docket No. 93-253

COMMENTS OF MOTOROLA, INC.

Mary E. Brooner
Manager, Wireless Regulatory Policy
Corporate Government Relations
Motorola, Inc.
1350 Eye Street, N.W.
Suite 400
Washington, D.C. 20005

January 5, 1995

TABLE OF CONTENTS

Page

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band	)	PR Docket No. 93-144
and		
Implementation of Section 309(j) of the Communications Act - Competitive Bidding 800 MHz SMR	)	PP Docket No. 93-253

COMMENTS OF MOTOROLA, INC.

Motorola, Inc. hereby files its comments on the Further Notice of Proposed Rulemaking in the above-captioned docket.[1] Therein, the Commission has proposed "a new framework for licensing of Specialized Mobile Radio (SMR) systems in the 800 MHz band."[2] Motorola supports the FCC's efforts to facilitate the delivery of new and better SMR services to the public and urges that both wide-area and traditional local SMR systems be assured of the opportunity to continue to thrive in the new regulatory and commercial environment.

---

[1] FCC 94-271 (released November 4, 1994) ("Further Notice").

[2] Further Notice, ¶ 1.

I. EXECUTIVE SUMMARY

It is important for the Commission to understand that the decisions it makes with respect to the "top 200" channels inevitably will have consequences for the remainder of the 800 MHz allocation. The 800 MHz channels currently are home not only to SMRs, but also to various private systems, both of which now use a variety of technologies. Motorola currently has customer and user relationships with all classes of incumbents and submits that the interests of all should be protected under the new regulatory regime.

The Commission's proposal to provide access to a contiguous 10 MHz block of spectrum will promote highly efficient and highly competitive new services to the public. At the same time, a sound plan can and must be developed to ensure that incumbent licensees facing retuning to new frequencies will enjoy strong safeguards and attractive benefits under the FCC's rules. Moreover, flexible opportunities must remain available for continued deployment of highly efficient services such as those provided by Motorola's ARDIS network offerings.

In addition, the Commission's licensing policies for wide-area SMRs should require that new systems be constructed promptly. Spectrum should not be permitted to be warehoused, and existing wide-area licensees should receive no further extensions of their already lengthened build out periods.

Finally, Motorola agrees with the Commission's proposals regarding the co-channel protection rules. Considering coverage realities, Motorola believes that the 22 dbu contour for the new MTA licensee is a reasonable standard. Retention of the existing emission mask requirement in the rules is also necessary in order to adequately protect incumbents from interference.

II. MOTOROLA CONCURS IN THE COMMISSION'S OVERRIDING GOAL TO ENSURE THE GROWTH OF IMPORTANT NEW WIDE-AREA SMR SERVICES CONSISTENT WITH THE LEGITIMATE CONCERNS OF INCUMBENT LICENSEES

A. The Further Notice Establishes Four Basic Objectives For the Commission's SMR Policies

In promulgating new rules for 800 MHz SMR systems, the Commission has undertaken to:

- Promote the development of wide-area, multi-channel SMR systems that can compete with cellular and broadband Personal Communications Services ("PCS") systems;
- Preserve the opportunity for continued licensing of smaller, local SMR systems;
- Explore application and licensing procedures, including competitive bidding, for both types of SMR systems; and
- Establish a flexible regulatory regime for all 800 MHz SMR systems that "will allow for more efficient licensing, eliminate unnecessary regulatory burdens on both existing and future licensees, and thereby enhance the competitive

potential of SMR services in the mobile services marketplace."[3]

Motorola submits that the public interest will be served by these efforts so long as all licensees of 800 MHz -- both local and wide-area SMRs and private system users -- benefit under the new regime.

B. Motorola Shares the Commission's Goal of Attempting To Meet the Needs of New Wide-Area SMRs

Commenters in the CMRS proceeding argued that a substantial contiguous spectrum block is necessary to enable wide-area SMRs "to utilize advanced technologies" such as spread spectrum "to compete effectively with cellular and broadband PCS systems."[4] Motorola agrees that an allocation of 10 MHz will allow for SMRs to take advantage of innovative new technologies and succeed in a marketplace populated with cellular and PCS licensees, who enjoy substantially larger spectrum allocations. Accordingly, Motorola is supportive of the FCC's proposal to establish a nationwide allocation of 10 MHz of contiguous spectrum for wide-area SMR operations.

Motorola's MIRS technology now employed in the 800 MHz band has the ability to operate on any SMR channels whether or not contiguous. This is an important and highly

---

[3] Further Notice, ¶¶ 1-2.

[4] Further Notice, ¶¶ 16-17 (footnote omitted).

beneficial technological breakthrough. However, no single solution can meet every user or service provider need. In such respects, access to the 10 MHz contiguous spectrum allocation would not only accommodate MIRS technology users, but also allow licensees the flexibility to pursue other technology options.

Motorola notes that currently available cellular-like technologies require contiguous spectrum. For example, the AMPS (Advanced Mobile Phone Service) technology used in cellular systems requires a minimum of 62 contiguous 25 kHz channels (including guardbands on each end) for a workable low capacity system. CDMA (Code Division Multiple Access) requires 72 contiguous 25 kHz channels for a single broadband channel offering including guardbands and GSM (Groupe Speciale Mobile protocol) will need approximately 112-128 contiguous 25 kHz channels including guardbands. Moreover, to construct a high capacity system comparable to cellular and PCS systems, these channel counts would need to be doubled or tripled. Accordingly, the 10 MHz contiguous allocation could meet any and all of the MIRS and non-MIRS needs. The minimum size of the contiguous spectrum block to be auctioned must take into account minimum spectrum needed to deploy any cellular-like technologies.

As the Commission has observed, allocating a minimum of 10 MHz of contiguous spectrum for wide-area SMR services also

will permit those services to compete more favorably with PCS and cellular. Cellular carriers have 25 MHz of clear and contiguous spectrum on which to operate, and many of these carriers appear poised to acquire additional spectrum during the PCS auctions. They will thus enjoy both a spectrum capacity advantage and a headstart advantage over wide-area SMRs.

PCS providers as well will be bidding on 10 and 30 MHz blocks of contiguous spectrum and are allowed to accumulate up to 40 MHz of PCS spectrum in any given market. During the PCS proceedings, almost every party filing comments contended that spectrum should be licensed in at least 10 MHz blocks and several commenters suggested that 40 MHz was an appropriate allocation.[5] Moreover, in the PCS hearings, several potential PCS providers and panelists chosen to comment on investment and financing issues noted the difficulties of financing and competing with 10 MHz license blocks.[6] This suggests that access to at least the 10 MHz contiguous allocation for wide-area SMRs is clearly essential

---

[5] See In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services, 8 FCC Rcd 7700, 7717-7724 (1993)(summarizing comments on size of licensing blocks)(hereinafter "Second Report and Order").

[6] See, e.g., Written Statement of Alex Brown & Sons, GEN Docket No. 90-314 at 2 (filed Apr. 11, 1994); Written Statement of BIS Strategic Decisions, GEN Docket 90-314 at 3 (filed Apr. 11, 1994); Written Statement of GTE Personal Communications Services, GEN Docket No. 90-314 at 5 (filed Apr. 11, 1994).

for SMR competitors to be economically competitive with new PCS entrants.

It is equally critical that wide-area SMRs have access to spectrum nationwide. Today's mobile communications customers are demanding the ability to communicate "on a real-time basis (or virtually real-time basis) while they are 'on the move.'"[7] To compete in this market and satisfy customer demands, the FCC has noted that cellular and paging companies are pursuing strategies to establish nationwide service.[8] Several cellular companies have nationwide roaming agreements so customers can use their equipment anywhere in the United States. Paging companies offer nationwide paging services, allowing business executives to be in contact with their offices and customers while travelling.

It follows that, for wide-area SMRs to be able to compete in a market demanding service anytime and anywhere, they must have access to contiguous spectrum nationwide. The nationwide contiguous 10 MHz allocation is, thus, critically important to the agency's ability to facilitate both the provision of enhanced service offerings to users and the

---

[7] In the Matter of Implementation of Sections 3(n) and 332 of the Communications Act, et al., GN Docket No. 93-252, PR Docket No. 93-144, PR Docket No. 89-553, ¶ 58 (September 23, 1994) (hereinafter "Third Report and Order").

[8] Third Report and Order, ¶ 62.

introduction of additional competition into existing wireless markets.

C. The Commission Should Ensure That the Costs and Burdens of Relocating Incumbents To Accommodate Wide-Area Systems Are Borne By the New Licensees

The Commission's goals properly recognize that improvements in wide-area SMR service should not be achieved at the expense of incumbent licensees. An orderly, fair and comprehensive transition plan is of the utmost importance. Whether retuning occurs as a result of voluntary negotiations or regulatory deadlines,[9] the FCC must ensure that incumbents will not be harmed by implementation of auctioned wide-area SMR systems. Both existing SMR systems and private users must be fully and completely assured that their interests will be protected in any retuning process.

Incumbent licensees have a right to expect that auction winners[10] will be obliged to meet several basic requirements before they are retuned to new frequencies. First, retuning costs and associated burdens must not be unreasonably imposed upon incumbent licensees. Second, retuned incumbent licensees must be assured comparable in kind spectrum homes.

---

[9] See Further Notice, ¶ 35.

[10] The FCC has determined that licenses in the 10 MHz allocation for wide-area SMRs will be auctioned. See Further Notice, ¶ 12.

Third, retuned incumbent licensees should be afforded regulatory advantages and priorities to ensure expanded opportunities for their own operations. Finally, retuned licensees should have absolute assurances that no future regulatory changes will disrupt their new operations. As described in more detail below, adherence to these principles will permit progress without prejudice for both new wide-area SMRs and incumbents' systems.

III. MOTOROLA SUPPORTS THE COMMISSION'S PROPOSAL TO ALLOCATE CONTIGUOUS NATIONWIDE SPECTRUM IN ORDER TO FACILITATE IMPLEMENTATION OF WIDE-AREA SMR SYSTEMS

A. Wide-Area SMRs Should Be Licensed In a Contiguous Spectrum Block On At Least an MTA-Like Service Area Basis

As discussed earlier, the Commission's proposed allocation of 10 MHz of contiguous spectrum on a nationwide basis is necessary to permit the development of a competitively viable wide-area SMR industry. It is, however, equally important that the FCC follow through on its proposal to license such advanced SMR systems on at least an MTA service area basis. As the agency concluded in its PCS rulemaking, such sizable service areas correspond to the consolidation that has occurred in the cellular industry and, accordingly,

will permit new entrants to compete more effectively against cellular systems.[11]

The FCC has previously recognized that MTAs were designed "based on the natural flow of commerce."[12] Thus, service areas corresponding to MTAs or similar geographic areas are likely to enjoy marketing and other commercial benefits in comparison to areas defined by other means. Moreover, the agency has found that such larger service areas should:

> Facilitate regional and nationwide roaming; allow licensees to tailor their systems to the natural geographic dimensions of . . . markets; reduce the cost of interference coordination between . . . licensees; and simplify the coordination of technical standards.[13]

For the same reason, MTAs should "facilitate the coordination and negotiation processes associated with . . . retuning activities" for incumbent licensees as well as provide "economies of scale and scope necessary to promote development of low cost [SMR] equipment."[14] MTA-based licensing should likewise ease the current burden facing entities proposing wide-area systems of individually licensing each base station and channel as well as seeking

---

[11] Second Report and Order at 7732.

[12] Id.

[13] Id.

[14] Second Report and Order at 7732-7733.

authority for extended construction and relief from landline requirements.[15] An important aspect of this reform will be the increased flexibility that licensees will enjoy in deploying transmitters to meet coverage requirements and traffic needs.

For economic and other reasons, the nature of SMR services also shows that any more limited service area would be too small to take full advantage of enhanced SMR capabilities. In particular, the capital expenditures necessary for a wide-area system are substantial. As a result, these systems have such high capacities and costs that they are only economical when they are constructed to serve a large area with a high volume of potential customers. Licensing such systems on a more restrictive BTA basis would not allow the licensee a large enough market area to bring network infrastructure equipment costs within the range necessary to compete economically with cellular and new PCS services.[16]

---

[15] See Further Notice, ¶ 5.

[16] BTAs are appropriate for PCS because that service is envisioned as a low-power, high-capacity microcellular service with low marginal costs per subscriber. Wide-area SMR operators are not expected to realize the capacity needed to deploy extremely low-power PCS microcells and coordinating frequency re-use for SMR systems is more difficult due to the greater propagation characteristics of 800 MHz, as opposed to 2 GHz, spectrum. Therefore, the SMR service will necessitate larger coordination distances, present greater problems in engineering systems into smaller license areas, and require larger service areas to enable economic viability.

If wide-area SMR spectrum were offered on a BTA basis, the potential wide-area SMR provider could, in theory, bid for the several BTAs which make up a particular MTA, or any other size service area. However, should the wide-area provider lose the auction for even one BTA in an MTA, the economic feasibility of the entire system would be jeopardized. The wide-area licensee would be constrained in its service area coverage because of the need to protect the BTA provider from interference and, conversely, to protect the wide-area system from interference from the BTA system. Thus, absent licensing on an MTA basis, wide-area SMR services will be too expensive to be competitive in the mobile communications market.

In contrast, Motorola supports site-specific licensing for systems on frequencies below channels 401-600 at 800 MHz.[17] Substantial congestion and intercategory frequency assignments already exist in the channels below 400 at 800 MHz and, with retuning, this spectrum will become even less flexible and more congested. In addition, it is impractical as an engineering matter to control signal strength levels sufficiently precisely at geographic borders

---

[17] Cf. Further Notice, ¶¶ 24-25.

to avoid interference between systems with a single or few channels.[18]

B. System Construction Requirements Should Promote Expeditious Delivery of Service to the Public

Once system licenses have been awarded post-auction, the winning bidders should be required to build out their systems promptly. Such a requirement deters speculators from seeking to warehouse frequencies and makes possible the delivery of services to the public at the earliest possible time. Accordingly, Motorola supports the establishment of reasonable time limitations and coverage standards for system construction.

Most importantly, Motorola urges the Commission not to permit any further extensions of the construction periods now applicable to certain existing wide-area systems.[19] Those licensees have already been granted up to five years to complete construction, and there can be no justification for further deferral of the time for delivering their channels for use by the public, particularly in an environment in

---

[18] RF propagation techniques at 800 MHz are such that it is very difficult to control signal propagation at high level sites and with high power stations typically used by incumbents, which can experience frequency hops in excess of a hundred miles. As a result, there are special FCC Part 90 rules that apply to the mountainous terrain of Southern California and provide 115 mile protection.

[19] See Further Notice, ¶ 47.

which numerous other potential users of those channels are likely to be seeking spectrum.[20]

IV. ISSUES ARISING FROM THE RETUNING OF INCUMBENT LICENSEES MUST BE FULLY AND FAIRLY ADDRESSED

A. Motorola Appreciates the Importance of the Issues Affecting the Retuning of Incumbent Licensees Raised in the Notice and by SMR Operators

Although the FCC has proposed to adopt only a voluntary retuning policy for incumbent licensees, it has expressed a willingness to receive comment on other alternatives such as mandatory retuning. Motorola believes that, under any retuning policy the Commission should ultimately adopt, the legitimate concerns identified by incumbent 800 MHz licensees must be addressed. As described in the Further Notice and comments previously made by SMR licensees, those concerns include the following.

Virtually all parties recognize that incumbents must be protected from bearing the costs of retuning or otherwise relocating their systems. Relevant costs could include equipment, regulatory, financial, zoning, engineering, site,

---

[20] An exception to this principle could be made for those situations where the existing licensee is also the relevant auction winner and desires to conform its system-wide construction schedule to its new operational plans, consistent with the new build out requirements in the rules.

and other direct and indirect costs.[21] All such costs should be deemed fully reimbursable and guaranteed by the MTA licensee.

Once retuned, incumbent licensees also have a right to expect that their systems will be free from any further disruptions. After the completion of retuning, licensees should be guaranteed that their new spectrum home will not be reallocated or auctioned to different services or entities. In the absence of such assurances, the resulting lack of stability for business planning purposes may inhibit licensees from taking full advantage of new technologies and service possibilities to benefit the public.

Any incumbent who is reassigned from a contiguous channel within the 200-channel block to a non-contiguous channel must be assured that the new channel offers comparable RF coverage and system performance. Nothing more or less should be required.

Incumbent licensees likewise require protection from material disruption of their operations during the retuning process. Any cutover to new frequencies or facilities presents the risk that service will be degraded or

---

[21] See, e.g., Comments of PCC Management Corporation, GN Docket No. 93-252, at 4 (filed July 11, 1994); Comments of Don Cook, GN Docket No. 93-252, at 2 (filed July 11, 1994).

interrupted for some period of time.[22] It follows that wide-area licensees should be required to present incumbents with a plan for minimizing or eliminating the potential for material disruption in their services as part of any retuning package.

In particular, a retuning plan should reasonably address the following types of incumbent concerns:

- Replacing SMRs infrastructure and end user customer equipment as well as private incumbents' equipment which cannot be retuned to a new frequency;
- Providing alternative services for customers during the cut-over period and ensuring that there will be no interruption of service for private systems providing critical services;
- Assuring traditional SMR licensees that wide-area service providers will not attempt to "steal" customers during the retuning process; and
- Ensuring that new frequencies have comparable coverage and system performance capabilities.

Finally, but perhaps most importantly, incumbent licensees agreeing to retuning should be guaranteed access to sufficient spectrum to continue their operations.[23] In

---

[22] Joint Comments of Southeastern SMR Association, Idaho Communications Limited Partnership, Teton Communications Inc., South Carolina Communications Limited Partnership, Advanced Electronics, East Texas Communications Limited Partnership, John Mitchell Company, GN Docket No. 93-252, at 20-21 (filed July 11, 1994).

[23] Several incumbents expressed concern regarding the lack of available spectrum. See, e.g., Comments of: Industrial Telecommunications Association and Alliance of Private 800/900 MHz Licensees, GN Docket No. 93-252, at 2-5 (filed July 11, 1994); NABER, GN Docket No. 93-252, at 15-16 (continued...)

order to preserve the viability of incumbent systems, the Commission must ensure that existing non-contiguous channels remain available to these licensees.

To this end, all local licensees, both SMR and private, should retain unconditional access to the "lower 80" and the original 150 conventional channels at 800 MHz, as well as intercategory shared access to the business and industrial/ land transportation pool channels. In Motorola's view, it is presently premature for the Commission to cut off the flexibility it needs in order to accommodate retuning. Maintaining the flexibility embedded in intercategory sharing is necessary to the success of retuning. Therefore, Motorola proposes that the FCC adopt flexible assignment policies for all non-public safety channels in these bands. The Commission's rules -- including those applicable to intercategory sharing -- should foster rather than frustrate flexible and beneficial use of these frequencies.

The ARDIS network is a prime example of a system that makes good use of intercategory sharing to provide a spectrum-efficient service. ARDIS utilizes a technical configuration other than a high site SMR-type system. The ARDIS system is a "single frequency reuse" system which

---

[23](...continued)
(filed July 11, 1994); Mobile U.H.F., Inc., GN Docket No. 93-252, at 2 (filed July 11, 1994).

provides deep in-building coverage over an extended coverage area. Channels need not be dedicated over a wide area, but can be added as capacity requires augmentation. The FCC must ensure the existence of a hospitable home for efficient systems such as this.

Motorola strongly supports maintaining the availability of these channels for all "technically consistent" purposes, including aggregated wide-area operations. The emerging need for Intelligent Transportation Systems (ITS) is another example of one type of new wide-area wireless service that could be offered in this spectrum with the current flexibility that exists in today's rules.

In sum, whatever retuning policy the FCC ultimately adopts for incumbent systems, the legitimate concerns raised by these licensees should be addressed and a hospitable spectrum home found for their important service offerings. In this manner, traditional SMR and other operations as well as new MTA-licensed systems will all be capable of providing valuable services to the public.

B. Retuning Must Be Made an Attractive Prospect for Incumbent Licensees

In earlier proceedings in this docket, incumbent licensees underscored the lack of any tangible benefits for them in the Commission's wide-area SMR proposals. Motorola submits that, for reasons of fairness as well as to establish

an effective voluntary retuning program, incumbent licensees that voluntarily agree to retune their systems should be entitled to important benefits.

Among those benefits should be the availability of Section 1071 tax certificates to permit the deferral of any gain on system replacements or upgrades that may be negotiated. Such licensees might also be given the right to aggregate the spectrum at their retuned frequencies with other licensees to form more extensive or even wide-area systems. In addition, retuned licensees should receive a guarantee against future retuning requirements, as discussed above.

It is also critically important that whatever benefits retuned licensees receive be freely transferable. The right to convey or otherwise apply these benefits in the context of system acquisitions or other arrangements will ensure that licensees enjoy sufficient flexibility to meet their communications needs in the most efficient manner possible. It will similarly facilitate the development of innovative uses of the band while avoiding unnecessary infringements on the licensing and service flexibility of incumbents.

V. ADDITIONAL TECHNICAL ISSUES MERIT SERIOUS CONSIDERATION BY THE COMMISSION

Motorola concurs in the Commission's proposals regarding the co-channel protection rules. Systems with station-defined service areas (stations in the lower 80 channels or 150 General Category channels) should remain subject to the existing rules, and interference protection obligations should be imposed on wide-area licensees vis-a-vis both co-channel incumbent licensees and adjacent MTA systems.[24] Such protection should be consistent with Section 90.621(b) so as to ensure that incumbents as well as wide-area licensees can continue to provide valuable services to the public.[25] For the same reason, incumbents should be permitted to establish new "fill-in" stations so long as their authorized 40 dBu contour is not extended beyond existing limits.[26]

Previous rulemakings have established 40 dBu as an acceptable signal level at the contour or edge of the service area. Designating 22 dBu at the new MTA service boundary will result in a gap in adequate coverage level at the edges of both adjacent service areas. This gap will be especially important to serving customers in corridor areas.

---

[24] See Further Notice, ¶ 38.

[25] See Further Notice, ¶ 39.

[26] See Further Notice, ¶ 40.

As a practical matter, setting a 22 dBu signal level will force adjacent MTA licensees to negotiate different signal levels at their edges, as is now done in cellular services. Such negotiations may also be necessary as a result of the probable use of advanced digital technologies that could require different carrier-to-interference protection at the edges. Nonetheless, Motorola agrees that the 22 dBu contour for the new MTA licensee is a reasonable standard for the minimization of interference.

Finally, Motorola supports maintaining the existing emission mask rules. The discussion in the Further Notice could be interpreted to mean that a different emission mask would apply to the outer channels of the MTA channel block.[27] But, because no new rules are proposed in Appendix A, Motorola assumes that Section 90.209(g) will still apply as the emission mask at the band edge of the MTA channel block. Retention of this requirement is necessary in order to adequately protect incumbents.

VI. CONCLUSION

For the foregoing reasons, Motorola submits that the Commission should adopt 800 MHz licensing policies as described above to ensure ample opportunities for both wide-area SMR systems and incumbent licensees to provide

---

[27] See Further Notice, ¶ 43.

technologically advanced spectrum efficient services to the public.

Respectfully submitted,

MOTOROLA, INC.

By: Mary E. Brooner

Mary E. Brooner
Manager, Wireless Regulatory Policy
Corporate Government Relations
1350 Eye Street, N.W.
Suite 400
Washington, D.C. 20005

January 5, 1995